Steps To Accept Data Not Meeting Critical Criteria but Considered Valid

Due to the issues related to the OIG Managment Alert (see Page XX) with failing 1-point QC checks and data invalidation, it has become evident that past practice to remove the 1-point precision checks that result in invalidation of routine data may not have been the best practice (see QA EYE Issue 13 page 6). Since there are cases where there is compelling evidence to consider the routine data valid upon failure of a 1-point QC check, the check can be used as a marker of a monitoring "incident", and can also be used to ensure QC completeness requirements are met. However, we need to use these checks in the correct manner.

The following three scenarios may exist for a monitor when a 1-point QC check has exceeded the established acceptance criteria.

1. A 1- point QC check fails and there is **no compelling evidence** to consider the data valid; meaning the 1-point QC check provided a valid concentration and the monitors measured concentration exceeded acceptance limits and required analyzer adjustment. Therefore, the 1-Point QC check is considered a valid check. The 1-Point QC check is reported, and the null code "AS" (poor QA Results) replaces the routine data.
2. A 1- point QC check fails and **there is compelling evidence** to consider the data valid. For example, after the failure the monitoring organization reviewed the data, went out to the site did an "as is" QC check, performance evaluation or multi-point verification (no adjustment to analyzer) at a concentration around the original QC check that which showed the analyzer was operating within the 1-point acceptance limits. It is suggested that a 1-point QC check is then run the day that this evaluation is performed so that data from the acceptable check to the next 1-point QC check is also considered valid.
3. Similar to case #2 above where there is compelling evidence but a 1-point QC check was not run immediately after verifying that the analyzer is operating within acceptance limits.

In one scenario #1, the 1-point QC check will be reported to AQS since it is considered a valid check. It will not be used in aggregated statistics since in scenario #1 the routine data is removed and therefore the imprecision and bias represented by the QC check is no longer reflected in the routine data set. In the case of scenarios #2 and #3, the precision and bias of the 1-point QC check did not reflect the precision and bias of the monitor and therefore the 1-point QC point does not need to be reported[1]. Data will need to be flagged appropriately in order for AQS to "pick up the right signals" to remove these 1-point QC checks from aggregated statistics.

Commented [KPR1]: If a new acceptable 1-pont QC check is immediately run (scenario #2) should this be reported and thus used for calculating statistics?

Flagging Process for Scenarios 2 and 3

The following process is for gaseous pollutant data that fail to meet 1-point QC checks (or Zero/Span) but monitoring organizations **have compelling reasons/evidence to consider the data valid** (scenarios #2 and #3).

1. The failed 1-point QC check is not reported since the QC check is not considered valid.

[1] 40 CFR Part 58 Appendix A Section 5.1.1 require the results of all **valid** measurement quality checks to be reported to AQS.

2. Routine data within the time frame between the last acceptable check and the next passing check should be flagged with a "1" flag signifying failed critical criteria and a "V" flag signifying the data was reviewed and there is a compelling reason to consider the data valid.
3. During annual certifications monitoring organizations will provide compelling evidence for the "1V" flags. The AMP600 Report will be modified to include ways for the monitoring organizations to provide the compelling evidence. As an option, monitoring organizations can provide free form comments in AQS. This comment can be entered via the web application on the maintain raw data form. EPA will work with monitoring organization and provide additional guidance on this part of the process.
4. EPA Regions during the annual certification/concurrence process will concur with the data flagged "1V".

Any routine data represented by a failed 1-point QC check without completing steps 2 and 4 will be identified in EPA quarterly evaluation reports (currently in design phase) and will not be considered valid for regulatory use. EPA Regions will work with monitoring organizations on this data until a resolution of the validity of this data is reached prior to annual certification.

In addition, 1-point QC checks will be evaluated for completeness in the quarterly reports described above to ensure minimally a check is performed and reported (if valid) every 14 days. It is strongly suggested that these checks be automated to be performed every 24-hours or at least more frequently than every 14 days to minimize loss of data due to invalidation.

For now, steps 1-2 are available for use. We will be working with the National Air Data Group to get the certification/concurrence part of the process implemented before May 2018 concurrence as well as ensuring the correct calculations of precision and bias.